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Akihiro Hata

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EXAMINER

SCHEIBEL, ROBERT C

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/826,802	Applicant(s) HATA ET AL.	
	Examiner ROBERT C. SCHEIBEL	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims **1, 2, 5, 6, 8, 9, 12, 13, and 19** are objected to because of the following informalities:

- The phrase “means starting” in line 6 of claim 1 and line 8 of claim 2 should be changed to “means for starting”.
- The phrase “means canceling” in line 2 of claim 5 should be changed to “means for canceling”.
- The phrase “means adding” in line 2 of claim 6 should be changed to “means for adding”.
- The phrase “means receiving” in line 3 of claim 8 should be changed to “means for receiving”.
- The phrase “means forwarding” in line 5 of claim 8 should be changed to “means for forwarding”.
- The phrase “any one of” in lines 1-2 of claim 9 should be removed as only one claim is listed after the phrase.
- The phrase “means counting” in lines 3 and 7 of claim 12 and lines 3 and 8 of claim 13 should be changed to “means for starting”.
- The phrase “adding a packet size” in line 5 of claim 13 should be changed to “by adding a packet size”.

- The phrase “subtracting a packet size” in line 10 of claim 13 should be changed to “by subtracting a packet size”.
- The phrase “claim14” in line 2 of claim 19 should be changed to “claim 14”.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims **1-3, 5-7, 10-14, and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,377,546 to Guerin et al.

Regarding claim **1**, Guerin discloses a packet switching device receiving and forwarding a packet, comprising:

a counter indicating a storage capacity of specified packets (the counters updated in steps 58 and 59 of Figure 5b); and

means starting a forwarding restriction of the specified packets if said counter exceeds a preset forwarding restriction start threshold value (see figure 5a; if the occupied buffer space exceeds the buffer size (threshold), or if the occupied buffer space for the stream exceeds the maximum number of bytes allocated to the stream (another threshold), a forwarding restriction starts (the packet is dropped)).

Regarding claim **2**, Guerin discloses a packet switching device receiving a packet and, after storing the packet, forwarding the packet, comprising:

a counter, provided for every group to which specified packets belong, indicating a storage capacity of the specified packets belonging to the same group in received packets (the counter updated in step 59 of Figure 5b; the group to which the packets belong is the stream); and

means starting, if said counter exceeds a preset forwarding restriction start threshold value, a forwarding restriction of the specified packets belonging to a group associated with said counter (see figure 5a; if the occupied buffer space for the stream exceeds the maximum number of bytes allocated to the stream (threshold), a forwarding restriction starts (the packet is dropped)).

Regarding claim **10**, a packet forwarding restriction method by which a packet switching device receiving, and forwarding a packet executes a forwarding restriction of specified packets, comprising:

comparing a preset forwarding restriction start threshold value with a counter for indicating a storage capacity of the specified packets in received packets (the counter updated in step 59 of Figure 5b is the counter; as shown in Figure 5a, this value is compared with a restriction threshold (the maximum number of bytes allocated to the stream)); and

starting the forwarding restriction of the specified packets by said packet switching device if the counter exceeds the preset forwarding restriction start threshold value (see figure

5a; if the occupied buffer space for the stream exceeds the maximum number of bytes allocated to the stream (threshold), a forwarding restriction starts (the packet is dropped)).

Regarding claim **11**, Guerin discloses a packet forwarding control method by which a packet switching device receiving and forwarding a packet executes a forwarding restriction of specified packets, comprising:

comparing a preset forwarding restriction start threshold value with a counter, provided for every group to which specified packets belong, indicating a storage capacity of the specified packets belonging to the same group (the counter updated in step 59 of Figure 5b is the counter; the group to which the packets belong is the stream; as shown in Figure 5a, this value is compared with a restriction threshold (the maximum number of bytes allocated to the stream)); and

starting, if the counter exceeds the preset forwarding restriction start threshold value, the forwarding restriction of the specified packets belonging to a group associated with said counter by said packet switching device (see figure 5a; if the occupied buffer space for the stream exceeds the maximum number of bytes allocated to the stream (threshold), a forwarding restriction starts (the packet is dropped)).

Regarding claim **12**, Guerin discloses a packet switching device receiving and forwarding a packet, comprising:

means counting a storage size of a specified packet by adding, in the case of receiving the specified packet, a size of the received specified packet (see step 59 of Figure 5b; the specified packets are the packets belonging to the stream); and

means counting a storage size of a specified packet by subtracting, in the case of forwarding the specified packet, a size of the forwarded specified packet (see step 66 of Figure 7).

Regarding claim **13**, Guerin discloses a packet switching device receiving and forwarding a packet, comprising:

means counting a group-by-group storage size of packets by effecting grouping based on information added to packets, adding a packet size on a group-by-group basis in the case of receiving the specified packets (see step 59 of Figure 5b; the method of Guerin groups the packets by stream and maintains a count on a group-by-group (per stream) basis); and

means counting a group-by-group storage size of packets by effecting grouping based on information added to packets, subtracting a packet size on the group-by-group basis in the case of forwarding the specified packets (see step 66 of Figure 7).

Regarding claims **3 and 14**, Guerin discloses the limitation that the forwarding restriction is a process of discarding the specified packets in the received packets without storing the specified packets (see step 56 of Figure 5a).

Regarding claims **5 and 16**, Guerin discloses the limitation of means canceling the forwarding restriction when said counter becomes smaller than a preset forwarding restriction terminating threshold value (as shown in Figures 5a, 5b, and 7, the counter is updated whenever a packet is transmitted and then checked whenever a packet is received; if the counter is higher than the threshold at one time and then becomes lower than the threshold later, the forwarding restriction (dropping the packet) is cancelled (the packet is not dropped)).

Regarding claim **6**, Guerin discloses the limitation of comprising means adding, in the case of receiving the specified packet, a size of the received specified packet to said counter (see step 59 of Figure 5b), and subtracting, in the case of forwarding the specified packet, a size of the forwarded specified packet from said counter (see step 66 of Figure 7).

Regarding claim **7**, Guerin disclose the limitation of means adding, in the case of receiving the specified packet, a size of the received specified packet to said counter associated with a group to which this specified packet belongs (see step 59 of Figure 5b), and subtracting, in the case of forwarding the specified packet, a size of the forwarded specified packet from said counter associated with the group to which the specified packet belongs (see step 66 of Figure 7).

Regarding claim **18**, Guerin discloses the limitation that a buffer stored with the received packets, wherein said buffer is prevented from being occupied with the specified packets by setting such a threshold value as to be equal to or less than a fixed ratio with respect to said buffer (the threshold is set to a fixed ratio of the buffer size which prevents the buffer from

overflowing; in the case of Guerin, the ratio is a 1 to 1 ratio of the buffer size; see Figures 5 and 6).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims **4 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,377,546 to Guerin et al in view of U.S. Patent 6,426,943 to Spinney et al.

Guerin discloses all the limitations of parent claims 1 and 12, respectively. However, Guerin does not disclose expressly the limitations of claims 4 and 15. Spinney discloses the limitation that if a value counted by said counting means exceeds a predetermined threshold value, a priority of a part or the whole of specified packets is lowered by way of a forwarding restriction in steps 1230 and 1235 of Figure 44. Clearly, these steps disclose reducing the

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priority of packets when a count exceeds a threshold. Guerin and Spinney are analogous art because they are from the same field of endeavor of packet switching. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Guerin to reduce the priority of a stream in response to exceeding a threshold. The motivation for doing so would have been to minimize the likelihood of discarding packets and to provide higher priority to streams sending more data as they are more likely to be carrying time sensitive information as suggested by Spinney in lines 50-67 of column 2. Therefore, it would have been obvious to combine Spinney with Guerin for the benefit of minimizing the likelihood of packet discard to obtain the invention as specified in claims 4 and 15.

7. Claims **8 and 9** rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0062200 to Kesavan in view of U.S. Patent 6,426,943 to Spinney et al.

Regarding claim **8**, Kesavan discloses a packet switching device receiving and forwarding a packet, comprising:

means receiving a packet and storing the packet in a memory (the memory 124 is used to store packets); and

Kesavan further discloses dropping broadcast packets when it has detected the possibility of a packet or broadcast storm. This allows unicast traffic to continue without being disrupted by the broadcast storm.

However, Kesavan does not disclose expressly the limitation of forwarding, if a specified packet and a packet other than the specified packet are stored, the packet other than the specified packet ahead of to the specified packet. However, Spinney discloses reducing the priority of a group of packets if a particular threshold is crossed (see blocks 1230 and 1235 of Figure 44). Kesavan and Spinney are analogous art because they are from the same field of endeavor of flow control in packet switching systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Kesavan to provide a more gradual response to detecting an excess of broadcast packets by first reducing the priority of the broadcast packets and then discarding the packets if necessary. The motivation for doing so would have been minimize the likelihood of discarding useful packets. Therefore, it would have been obvious to combine Spinney with Kesavan for the benefit of minimizing the likelihood of dropping packets to obtain the invention as specified in claim 8.

Regarding claim 9, Kesavan, as modified by Spinney above, discloses the limitation that the specified packet is a broadcast packet in paragraph 16 on page 1. This paragraph discusses the need to minimize the bandwidth given to broadcast packets in order to reduce the likelihood of packet storms.

8. Claims **17 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,377,546 to Guerin et al in view of U.S. Patent Application Publication 2004/0062200 to Kesavan.

Regarding claim 17, Guerin discloses the limitations of parent claim 14 as indicated in the rejection above. However, Guerin does not disclose expressly the limitation of claim 17 that

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if a fixed period of time elapses since the forwarding restriction has been started, the forwarding restriction is canceled. Kesavan discloses a method of minimizing the likelihood of a broadcast storm by monitoring a byte count of a particular type of packet for a fixed amount of time. If the byte count exceeds a threshold, a forwarding restriction is imposed. When the interval ends, the restriction is lifted. See paragraph 24 as well as figures 5 and 6. Guerin and Kesavan are analogous art because they are from the same field of endeavor of packet switching control. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Guerin to change the threshold monitoring to use a fixed interval like that of Kesavan and to clear the forwarding restriction when the interval elapses. The motivation for doing so would have been to minimize the processing load on the switch such that it does not need to monitor the threshold for each packet received. It will simply discard packets for a certain period of time when it recognizes the threshold has been exceeded without performing the additional processing of checking the threshold. Therefore, it would have been obvious to combine Kesavan with Guerin for the benefit of minimizing processing load to obtain the invention as specified in claim 17.

Regarding claim **20**, Guerin discloses the limitations of parent claim 14 as indicated in the rejection above. However, Guerin does not disclose expressly the limitation of claim 20 that buffer occupation by the broadcast packets is managed on a group-by-group basis by setting such a threshold value that a total sum of threshold values of all the groups becomes equal to or smaller than a fixed ratio with respect to said buffer possessed by said device, whereby the buffer occupation by the broadcast packet of a specified group does not affect other groups. Kesavan

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discloses a method of minimizing the likelihood of a broadcast storm by limiting the bandwidth allocated to broadcast traffic so as not to impact unicast traffic. As indicated in Figures 3a and 3b, Kesavan selects a threshold value to limit the amount of traffic (packet rate) designated as available for broadcast traffic to be a percentage of the maximum packet rate. At the time of the invention, it would have been obvious to one of ordinary skill in the art to apply this concept of allocating a percentage of the resources as the maximum allowed for use by broadcast traffic to the method of Guerin. In this case, rather than limiting the maximum packet rate, the threshold would be set to limit the buffer usage to be a percentage of the total buffer size. The motivation for doing so would have been to minimize the likelihood of a broadcast storm as suggested by Kesavan in paragraph 16 on page 1. Therefore, it would have been obvious to combine Kesavan with Guerin for the benefit of avoiding a broadcast storm to obtain the invention as specified in claim 20.

9. Claim **19** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,377,546 to Guerin et al in view of U.S. Patent 6,426,943 to Spinney et al and in further view of U.S. Patent Application Publication 2004/0062200 to Kesavan.

Guerin discloses all limitations of parent claim 14 as indicated in the rejection above. However, Guerin does not disclose expressly the limitations of claim 19. Spinney discloses reducing the priority of a group of packets if a particular threshold is crossed (see blocks 1230 and 1235 of Figure 44). Guerin and Spinney are analogous art because they are from the same field of endeavor of packet switching. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Guerin to reduce the priority of a stream in

response to exceeding a threshold. The motivation for doing so would have been to minimize the likelihood of discarding packets and to provide higher priority to streams sending more data as they are more likely to be carrying time sensitive information as suggested by Spinney in lines 50-67 of column 2.

However, Guerin and Spinney do not disclose expressly the limitation that specified packets are prioritized lower than unicast packets so as not to affect unicast communications.

Kesavan discloses a method of minimizing the likelihood of a broadcast storm by limiting the bandwidth of broadcast packets so as not to affect unicast traffic (see paragraph 16 on page 1). Guerin, Spinney and Kesavan are analogous art because they are from the same field of endeavor of packet switching control. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the above combination of Guerin and Spinney to lower the priority of broadcast packets when they have been detected to exceed a threshold. The motivation for doing so would have been minimize the likelihood of broadcast storms as suggested by Kesavan in paragraph 16 on page 1. Therefore, it would have been obvious to combine Kesavan with the combination of Guerin and Spinney for the benefit of minimizing the likelihood of broadcast storms to obtain the invention as specified in claim 19.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 20040057376 A1 to Sasvari et al discloses a communications system which polices the amount of bandwidth for each user.

- US 20030123390 A1 to Takase et al discloses a leaky bucket type traffic shaper and bandwidth controller.
- US 20030012197 A1 to Yazaki et al discloses a packet transfer apparatus with the function of flow detection and flow management method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. SCHEIBEL whose telephone number is (571)272-3169. The examiner can normally be reached on Mon-Fri from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wing F Chan/
Supervisory Patent Examiner, Art Unit 2619
3/28/08
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Examiner
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